INVESTOR TRIP - TEXAS CITY

GROWTH IN HYDROGEN

Becoming The Investment In Industrial Gases, Surface Technologies, and Services

November 22, 2002

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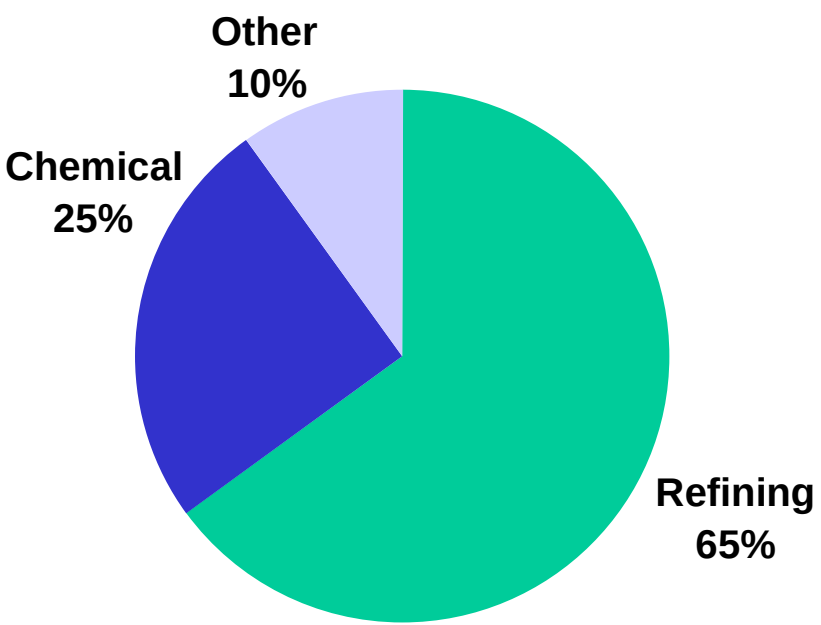
Forward Looking Statements

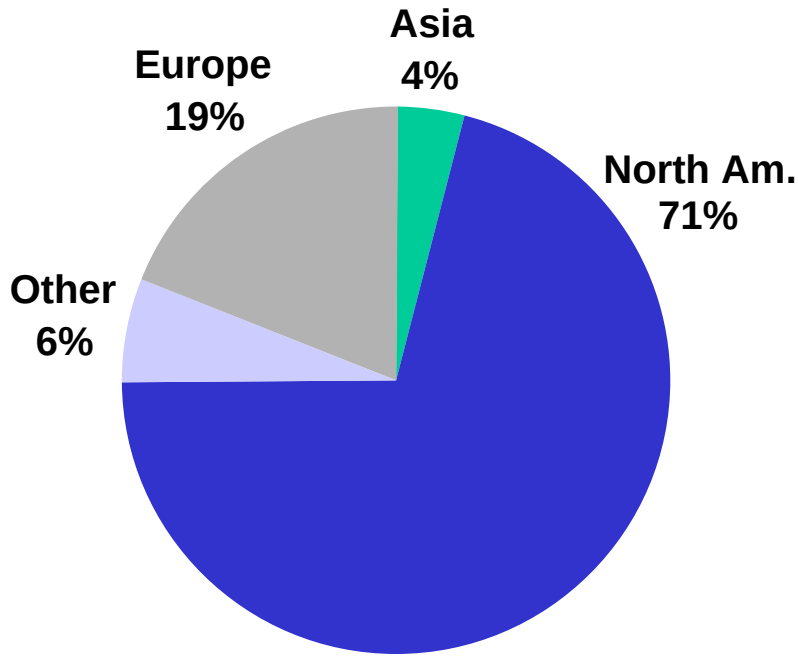
The forward-looking statements in this presentation concerning revenue, earnings, return on capital, volume, growth, economic growth rates, stock price performance, and the value of future product and service offerings involve risks and uncertainties, and are subject to change based on various important factors. These include the impact of changes in worldwide and national economies, availability and cost of power and other energy materials and the ability to recover these costs, pricing fluctuations in foreign currencies, changes in interest rates, the continued timely development and acceptance of new products and processes, the impact of technologies, competitive products and pricing, and the impact of tax and other legislation and regulation in the jurisdictions in which the company operates.

Global Purchased Hydrogen Market

2001 Global Volume: 2,300 MMSCFD



End-Use

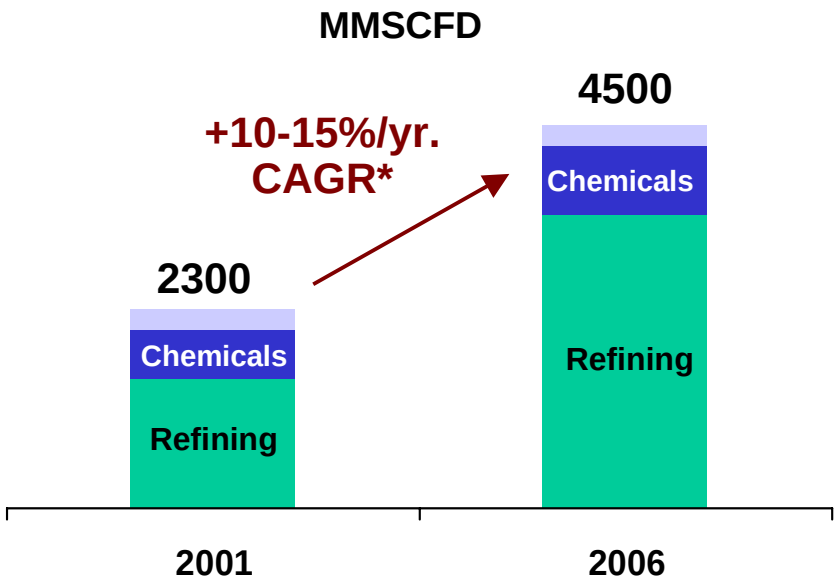


Geography

Refinery and Chemical Users in North America and Europe are the Major Purchasers of Hydrogen

Source: SRI International

Global Hydrogen Demand is Expected to Grow 10-15%



Refining Growth

- Heavy/Sour Crudes
- Refinery Operations & Conversion Capacity
- Environmental Regulations for Gasoline & Diesel
- Outsourcing Production

USA - 15-20%

- 2004 - 30 ppm Sulfur in Gas.
- 2006 - 15 ppm Sulfur in Diesel

Europe - 15-20%

- 2005 - 50 ppm Sulfur in Diesel
- 2008 - 10 ppm Sulfur in Diesel

Chemicals Growth

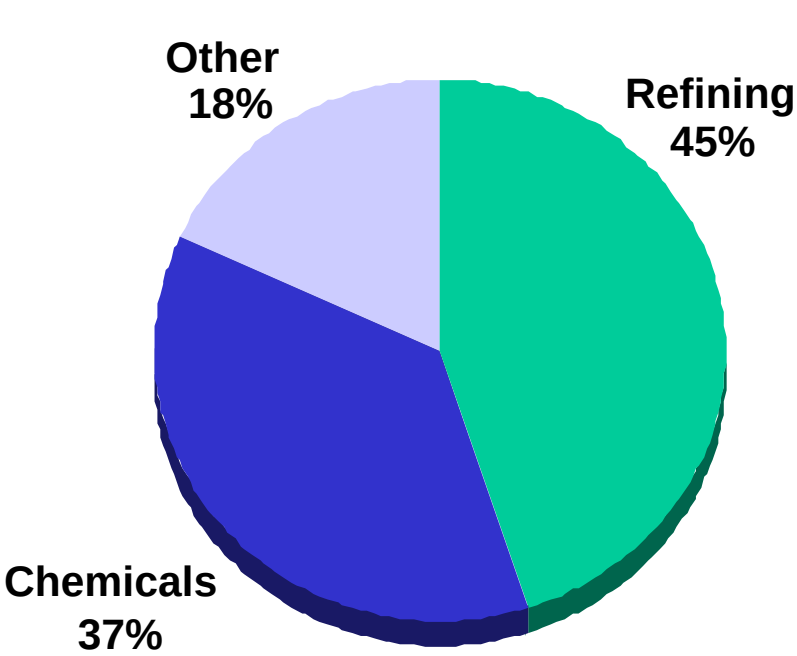
- USA & Europe Flat
- ASIA Grassroots Projects

**Source: SRI International*

Praxair Global HYCO Business Growth Driven By Refineries

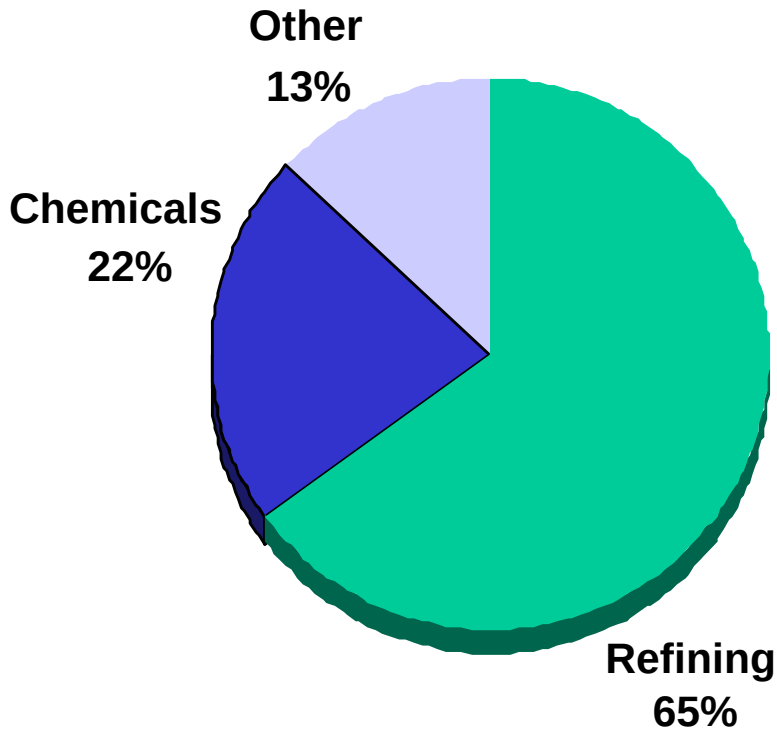
2001

$525 MM USD*



2006E

$900 MM USD**



**Average natural gas price $4.69/mmbtu*
***Assumes constant natural gas pricing*

Hydrogen Production Methods

Natural Gas → **Steam Methane Reformer**

- Hydrogen for Refining
- Maximum H_2/CO/Steam Efficiency
- Large Scale CAPEX Efficiency

Hydrocarbon → Oxygen → **Partial Oxidation Reaction**

- CO & H_2 for Chemicals
- Hydrocarbon Feedstock Flexibility
- O_2 Supply/Cost is Critical

Crude Hydrogen → **Pressure Swing Adsorption**

- H_2 Purification from Multiple Sources
- Maximum CAPEX Efficiency
- Benefits from Higher Partial Pressure

Key Praxair Hydrogen Facilities

SMR - 23
PSA - 31
POX - 2
Pipeline Systems - 7

2001 Global Hydrogen Production 550 MMSCFD

Key Success Factors

- **Strong Customer Growth – Positioned for Future Sales**
- **Invest Early in Targeted Growth Areas – And Wisely**
- **Pipeline Infrastructure**
  - **Reliability and Flexibility of Supply**
  - **Staged Investment Strategy**
- **Polyproduction Economics**

  H_2, CO, CO_2, and Steam Sales

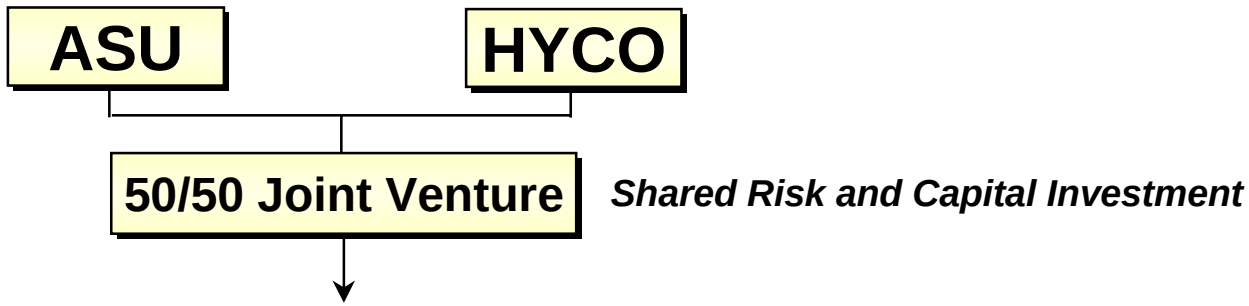
Investment Choices

	Enclave	No Infrastructure
Commercial Options	Base Plus Supplemental Needs Flexible Terms	Total Off Take Sole Customer
Customer Diversification	Multiple	One
Reliability	Best	Good
Supply Flexibility	Base/Spot/Supplemental	Requires Stable Load
CAPEX (100MMSCFD)	$60-70MM	$80-100MM
Capex/Sales	0.8	1.3

Customer Value is Enhanced Through Investment & Operational Advantage

Caojing China Petrochemical Complex

- **Designated Investment Area by SINOPEC & Government Planning**
- **2005 Start-ups of Multiple Integrated Petrochemicals Facilities**
- **Praxair/Air Liquide 50/50 Joint Venture**



Global Customers	Processes	Investment
BP/SECCO	Ethylene, Polyethylene, ACN	$1500 MM USD
BASF	Poly THF	$ 250 MM USD
BASF/Huntsman	MDI/TDI	$1000 MM USD
Local Chinese	VCM	$ 250 MM USD

North American Key Drivers for Hydrogen Growth

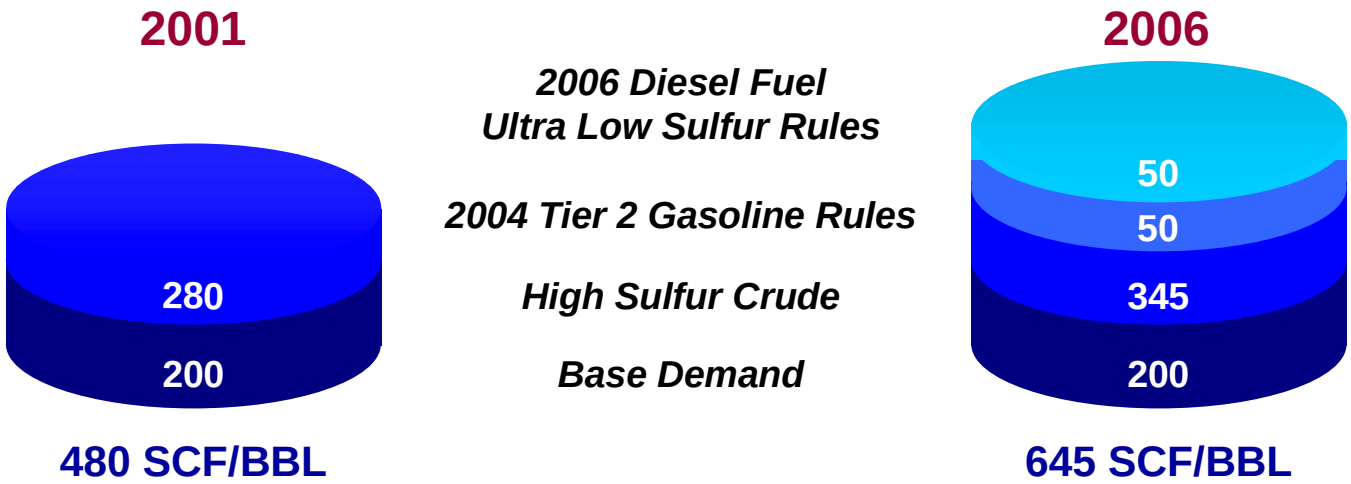
- **Crude Oil Supply Heavier/More Sour**
- **Crude Refining Capacity will Increase +20% by 2015***
- **Over the Fence Supply**
- **Environmental Regulations will Require Clean Fuels**
  - Gasoline Specifications 30ppm of Sulfur by 2004
  - Methyl Tertiary Butyl Ether Replacement Mandated by 2004
  - Diesel Fuel Specification 15ppm of Sulfur by 2006

North American Refiners in the US Gulf Coast Will Use Significantly More Hydrogen

****Source: Purvin & Gertz***

Praxair Gulf Coast: Growing Hydrogen Use in Gasoline and Diesel Production

Hydrogen Used Per Barrel of Oil (Standard Cubic Feet)



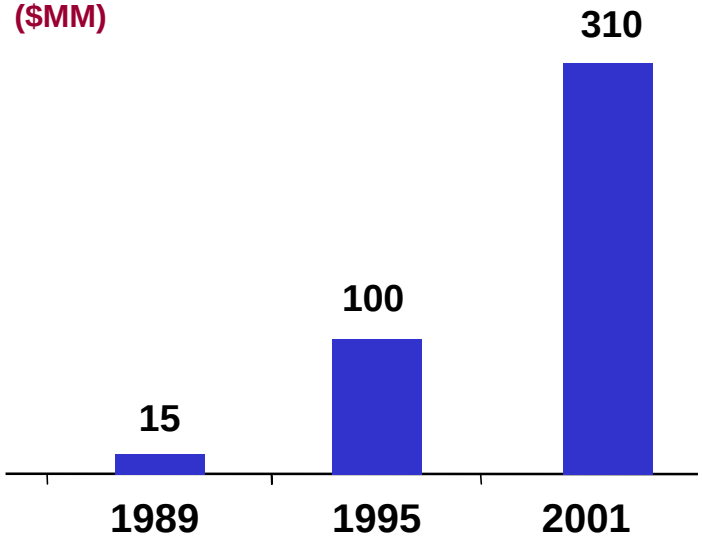
Praxair Gulf Coast Refinery Customers

2001	18% CAGR	2006
265 MM SCF/DAY	→	610 MM SCF/DAY

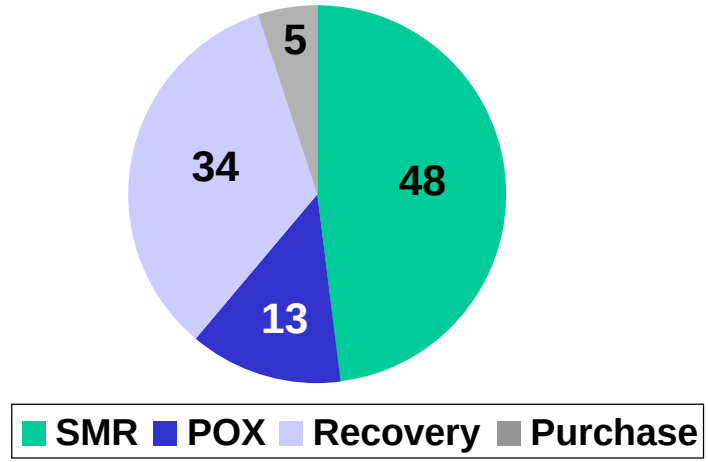
Source: Praxair Estimate

Praxair US Gulf Coast HYCO Growth

HYCO Sales
($MM)

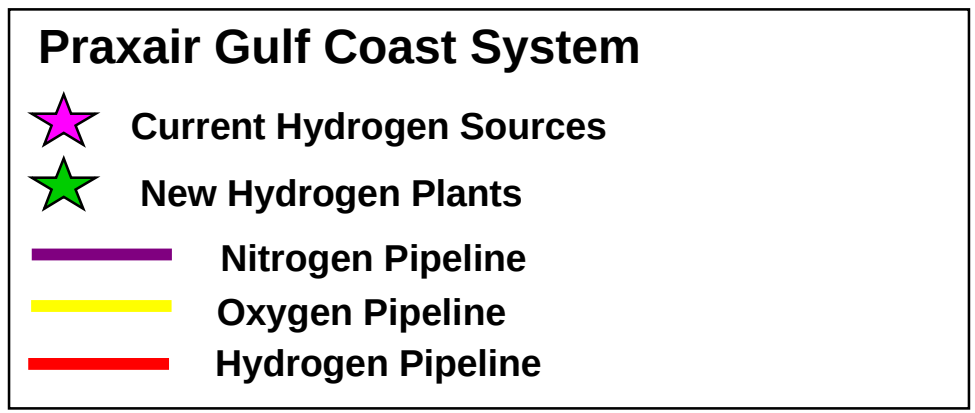


2001 Supply Mode



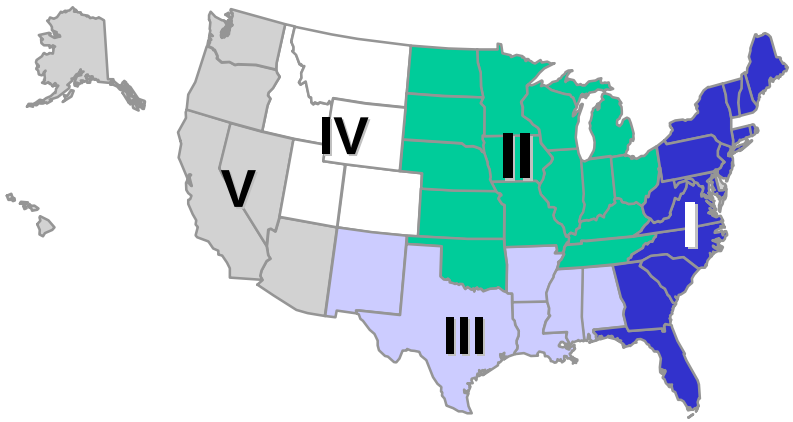
	1989	1995	2001
Sales	$15 MM	$100 MM	$310MM
Customers	10	20	45
P/L Miles	30	110	310
H2 MMSCFD	45	150	265
Investment	$55MM	$110MM	$290MM

(map available upon request)

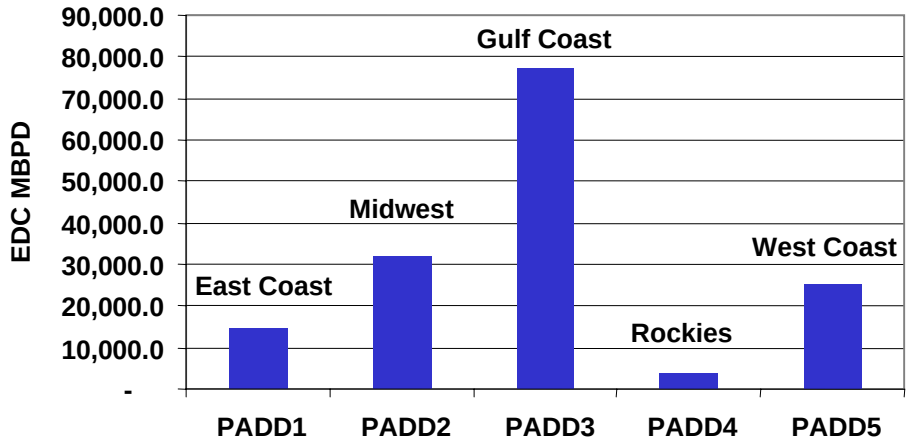


Gulf Coast Customers Are Complex

Petroleum Administration for Defense Districts (PADD) Regions



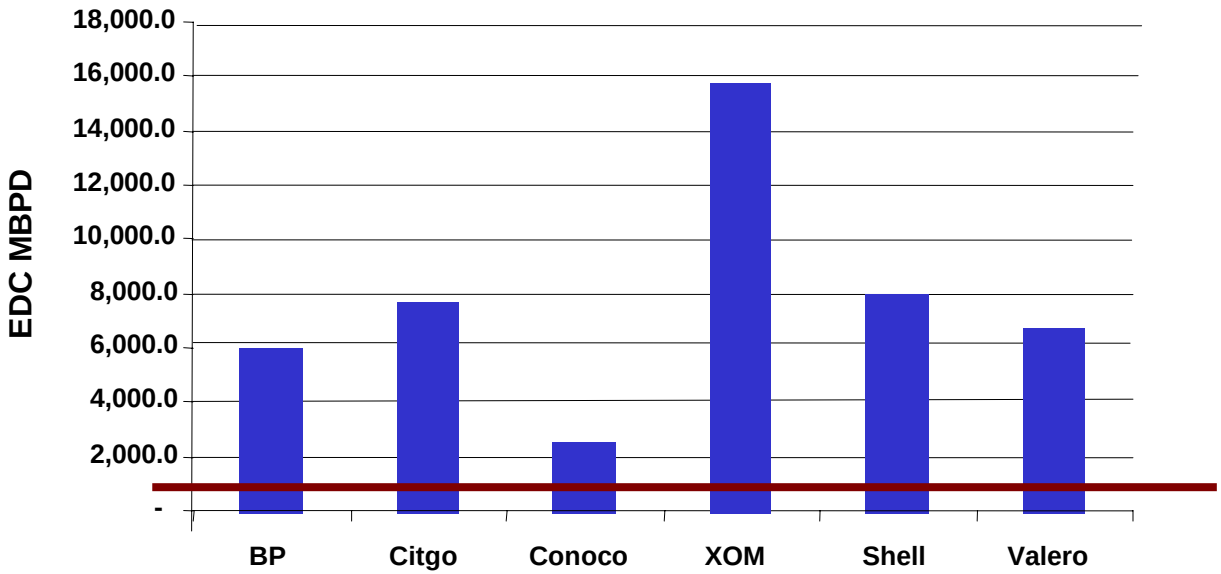
PADD Region EDC*



Gulf Coast Customers are the Largest and Most Complex ➡ Maximum Hydrogen Intensity

**Equivalent Distillation Capacity "EDC"*

Praxair Gulf Coast Customers are the Most Hydrogen Intensive



Praxair Customers in PADD3		
EDC	% of PADD 3	% of US
47,233 MBPD	61.10%	30.90%

Equivalent Distillation Capacity "EDC"

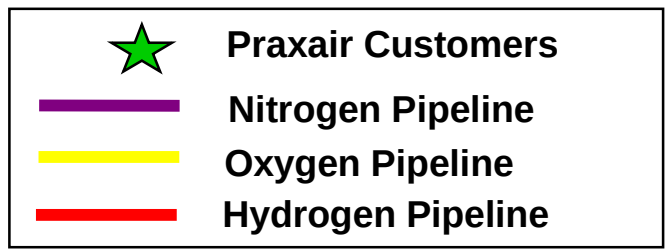
Average PADD III EDC (MBPD)

Praxair Strong Number One Position

Texas City to Lake Charles (3.8 MMBPD)

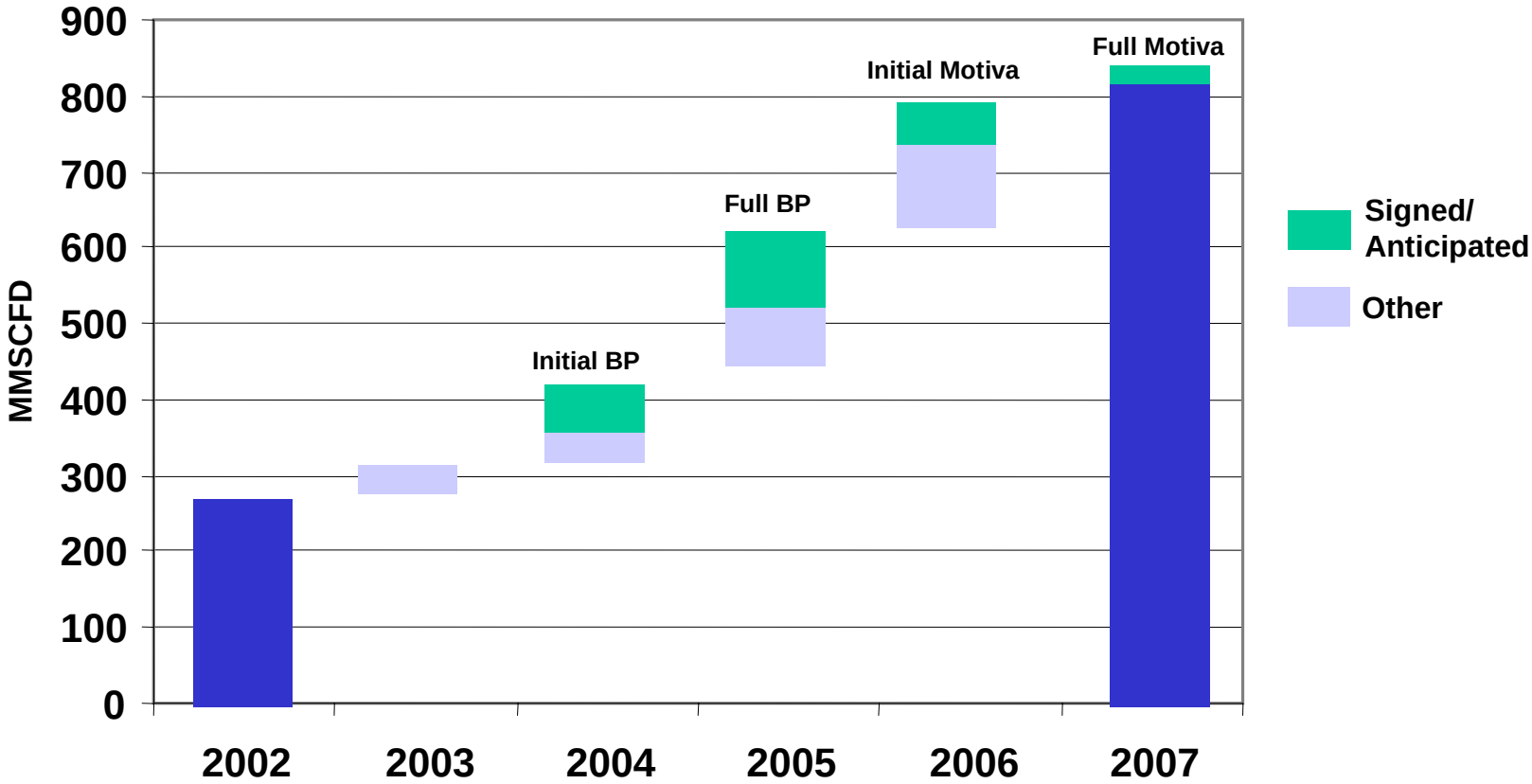
Praxair H2		Competitive H2	
Connect	Primary Supplier	Connect	Primary Supplier
86%	55%	37%	18%

(map available upon request)



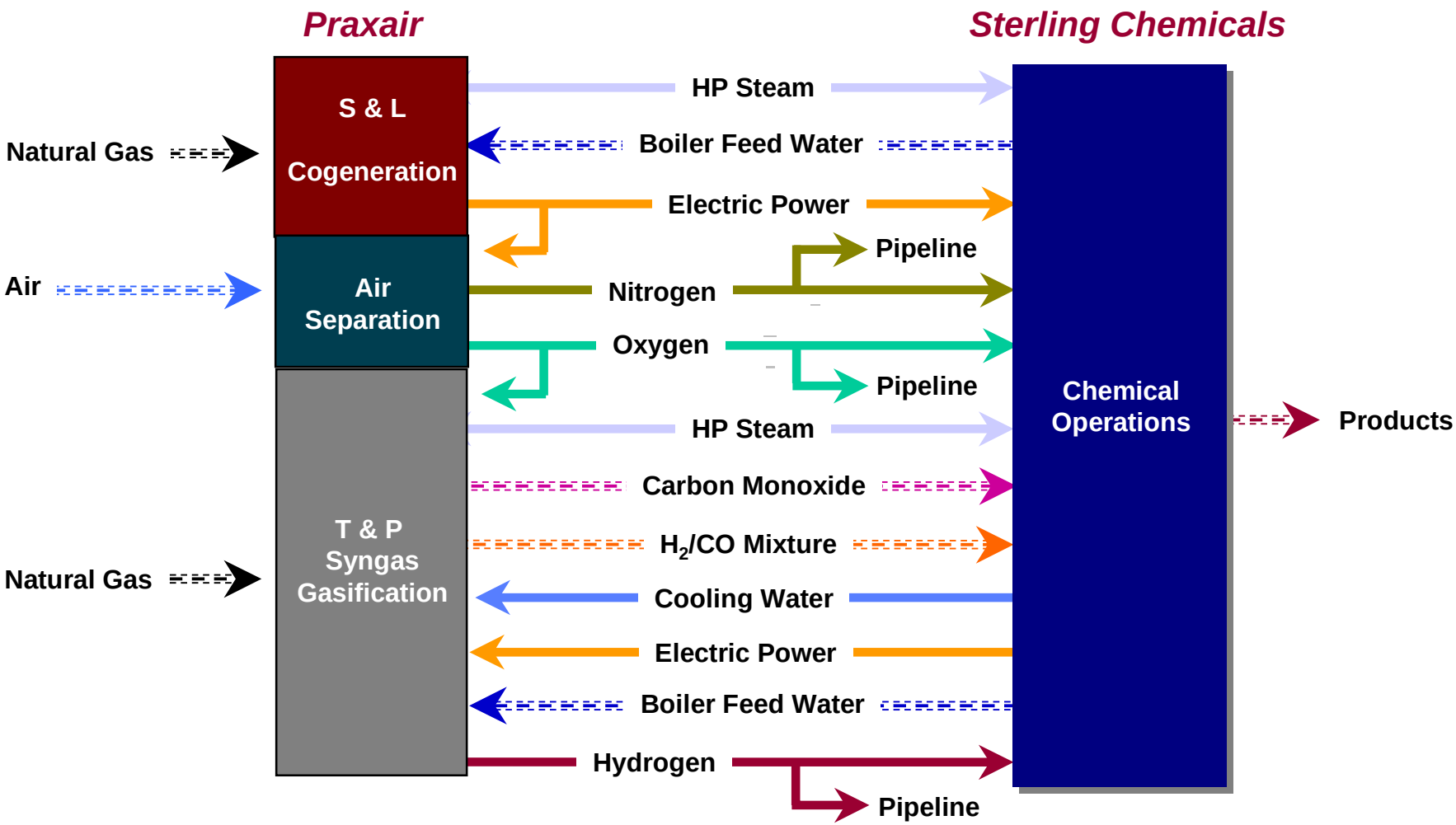
Praxair has Won Over 80% of the New Hydrogen Supply Awarded in this Area in the Last Year

Praxair Gulf Coast Hydrogen Growth

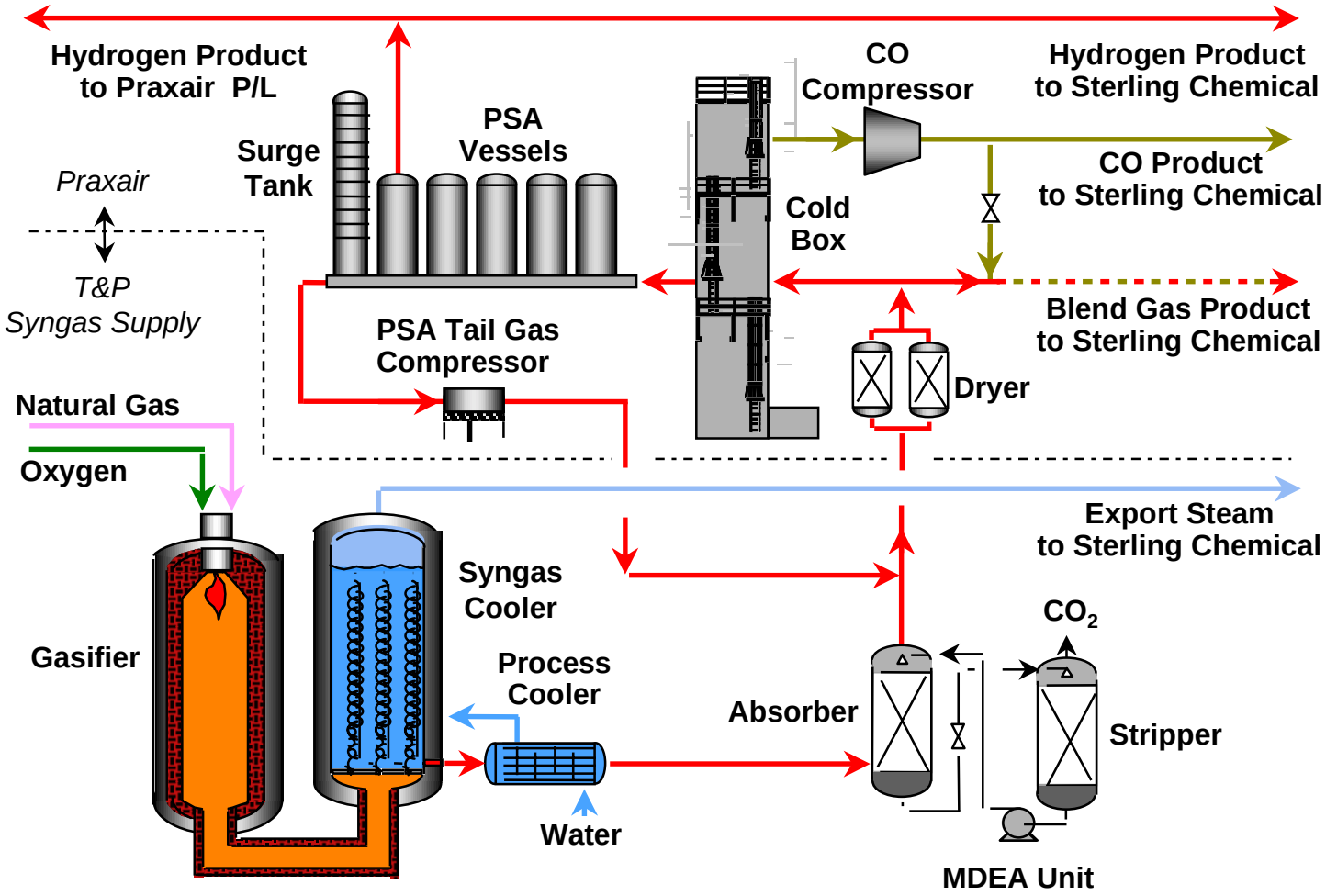


300 MMSCFD Signed - 200 MMSCFD Anticipated

Texas City Complex



Texas City, TX - 64 MMSCFD H_2/CO Facility



Texas City, TX - 64 MMSCFD H_2/CO Facility